

The  
Morton  
Arboretum

# *Selecting & Planting Trees*

The Morton Arboretum • Lisle, Illinois  
in cooperation with the  
Office of the Governor • State of Illinois



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## SELECTING AND PLANTING TREES

This guide is designed to encourage tree-planting. Whether the project involves one tree, or is an extensive community effort, careful planning will increase the chances of success.

Trees in our cities and neighborhoods are disappearing at an alarming rate. Recent studies show that for every four trees that die, only one is replanted. Fortunately, individuals and communities throughout the country have begun to recognize the many values that trees can bring to urban environments, and are beginning to undertake planting projects. Trees have a tremendous impact on the image a community projects. Like all green plants, trees remove carbon dioxide from the air. Carbon dioxide is a major contributor to global warming. Trees remove particulate pollutants from the air, and help to control soil erosion. Trees have more tangible benefits as well. For a single home, three trees planted on the south and west sides can reduce cooling costs by up to 50 percent. Evergreens planted on the north side of a house can block winter winds and reduce heating costs. Trees and other landscaping can add considerably to the value of a home.

If our urban and suburban trees are to be healthy and long-lived, careful attention must be given to their selection, planting, and management. The urban environment is harsh, and the life span of city trees is often very short compared to that of their woodland counterparts. Every tree planted will require care over the decades of its life span. Plans for future maintenance should be part of every tree-planting program. Professional care can help to maximize the beauty, function, and longevity of urban trees.

Every community would benefit from having an advisory Tree Commission, and a staff arborist, or consultant, to oversee tree planting and maintenance programs. Information on community tree programs is available. The National Arbor Day Foundation sponsors the Tree City USA program, which recognizes communities with exemplary tree programs. The Global ReLeaf program, sponsored by the American Forestry Association, can provide information to help organize local tree-planting initiatives.







## EVALUATING THE SITE

### Exposure

The amount of sunlight a tree receives and the time of day the sunlight is received can limit the kind of tree that can be planted. Though all-day sun is required by some plants, it can be too intense on some sites where heat and light are reflected from nearby buildings or pavement. An area with morning sun and afternoon shade often provides adequate sunlight and protection during the hottest part of the day. An area with morning shade and afternoon sun may be more suitable for trees that are tolerant to heat or drought stress. The intensity of all-day shade can vary from the open shade on the north sides of fences or buildings to the very dense shade under low tree branches.

### Importance of soils

Soil conditions frequently limit planting success. Planting methods should be adjusted to fit soil types. Poorly drained, clayey soils, typical of modern urban developments, require procedures much different from the well-drained, friable (crumbly) soils found in older neighborhoods.

Soil texture is the ratio of particle sizes in a soil. Sandy textured soils are composed mostly of large particles, while clayey soils contain many microscopic particles. Soil structure refers to the size and shape of soil aggregates (soil particles held together in clumps by organic compounds). Spaces between aggregates allow movement of air and water through the soil. Well-aggregated soils provide optimum air and water movement to plant roots. Poorly aggregated soils are common in city landscapes and are often the result of compaction. Thorough incorporation of organic matter (compost, peat moss, etc.) helps alleviate these problems, as does cultivation.

Soil wetness and related drainage conditions are controlled by a number of factors, including precipitation, soil texture and structure, permeability, infiltration characteristics, and landscape position. The degree to which soils drain under natural conditions can be described as follows: *Somewhat excessively drained soils* are characterized by rapid drainage and low available moisture that subject plants to serious drought stress during periods of low rainfall; *well-drained soils* have optimal drainage to support plants and provide adequate moisture during most growing seasons; *somewhat poorly drained soils* are wet for extended periods of time and restrict the root development and growth of most plants; *poorly drained soils* are wet throughout most of the year and restrict the root development and growth of all species of plants except wetland plants. Both somewhat poorly and poorly drained soils may require the use of artificial drainage or special planting techniques described in the "Planting Trees" Section.

Soil reaction, or pH, is a general indicator of nutrient availability. In slightly acid to neutral soils (pHs between 5.5 and 7.2), most nutrients are available at optimal levels. Some nutrients, such as iron and manganese, become less available in alkaline soils (pH above 7.2) because of chemical changes caused by the alkalinity. Other nutrients become less available in highly acid soils (pH less than 5.5), but these soils are not often encountered in Illinois. Species vary in their ability to tolerate alkaline soils.



Soil pH induced nutrient deficiencies can sometimes be corrected by proper soil amendment or fertilization, but selection of a species compatible with existing pH is preferable. County offices of the University of Illinois Cooperative Extension Service can arrange for soil testing at a nominal fee.



## SELECTING TREES

Selection of the proper tree species is a very important first step when considering planting a tree. Selecting the wrong plant can be a waste of money when the plant fails to survive, or it can be the beginning of years of problems.

A recent study shows that half of our urban trees in Illinois are maples, and that only six tree species make up 86 percent of all the trees. Planting a wide variety of species is important so that no single disease or insect problem can destroy a large percentage of urban trees. Dutch elm disease has devastated many beautiful streets lined only with elms. We must not let history repeat itself.

There are several factors to consider when deciding what size tree to plant. Large trees provide immediate visual impact but are expensive and slow to establish. Small trees are more economical and will establish more rapidly. This quick recovery allows smaller trees to grow rapidly during a time that a larger tree is still struggling to become established, causing the size difference to decrease.

### Characteristics to consider:

There are many tree species that can be successfully planted in the urban environment. Urban conditions vary widely, and the species chosen must be carefully matched to each site. Factors to consider are explained below and correspond to information in the table on page 6.

**Useful geographic range** — Climate limits the variety of plants that can be grown in any region. The State of Illinois has been divided into three regions, and appropriate range for each plant are indicated in the table.



*The state of Illinois can be divided into three zones of plant hardiness. Select plants that are appropriate for your area.*



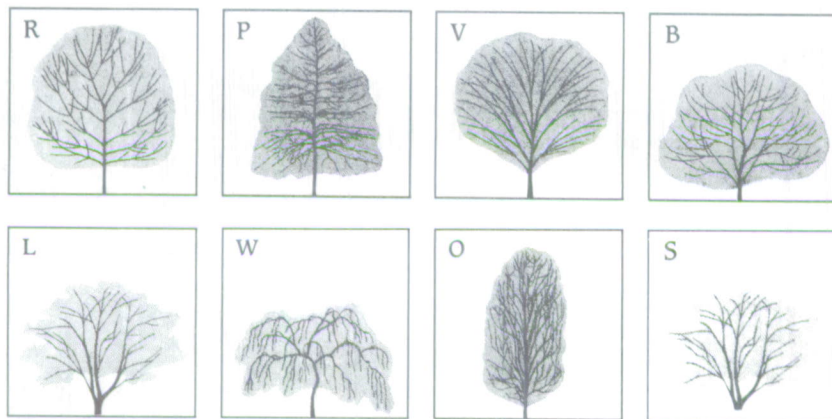
**Drought tolerance** — The urban environment is warmer and drier than the surrounding open countryside. This heat-island effect sometimes requires the selection of more drought-tolerant trees, particularly in areas with extensive pavement. Trees with leathery leaves and vigorous roots are often drought tolerant.

**Soil drainage and alkalinity** — Different trees are adapted to different soil situations. For example, floodplain species, such as green ash, do well in poorly drained soils. Cherries require well-drained soil. Pin oaks do poorly on alkaline soils. Consult your local Soil Conservation Service Office for soil information in your area.

**Salt tolerance** — Air borne pollutants can damage plants. The most serious in the Midwest is deicing salt used on roadways. Highly susceptible species should not be planted near major roads that are frequently salted. Other pollutants do not usually pose serious problems for trees in Illinois.

**Pest susceptibility** — Most plants are susceptible to various kinds of insect pests and diseases. A few plants have problems that are serious enough to advise against planting them. For example, most white-barked birches are susceptible to bronze birch borer and may live for only a few years. Pest problems and other drawbacks are listed in the 'limitations' column in the table that follows.

**Form** — The height, width, and branching pattern of a tree are important. Low-branching, spreading trees are not appropriate along streets, but are very useful when screening is desired. On a site with many trees, a mixture of forms is sometimes desirable.



*Tree shape varies widely and is an important consideration when selecting a species. R. Rounded (as wide as tall), P. Pyramidal, V. Vase shaped, B. Broad (wider than tall), L. Layered, W. Weeping, O. Oval (taller than wide), S. Shrubby.*

**Mature height** — Select a tree of appropriate size for the space. Small trees should be planted under utility wires. Medium trees can be used to match the scale of homes. Large trees are often best in large, park-like spaces. On the table that follows, □ corresponds to a mature height of less than 20 feet while ■ to a mature height of 20 to 40 and ■ corresponds to a mature height of more than 40 feet.



**Growth rate** — Growth rate should not be the most important consideration when selecting a tree. Many fast-growing trees have certain other undesirable characteristics such as brittle wood. On the table that follows, □ corresponds to a slow rate of less than 10 inches/year, ■ corresponds to a moderate rate of 10 to 20 inches/year, while ■ corresponds to a rapid rate of more than 20 inches/year.

**Longevity** — Urban trees have shorter life spans than woodland trees. Thirty to forty years is considered average for an urban tree. Many fast-growing trees are very short-lived. Lombardy poplars often live less than 10 years. On the table that follows, □ corresponds to a life expectancy of less than 25 years, ■ corresponds to an intermediate life expectancy of 25 to 50 years, while ■ corresponds to a long life expectancy of greater than 50 years.

**Ornamental characteristics** — Many plants have especially attractive features or seasonal interest. Other characteristics may detract from the usefulness of the plant. For example, flowers of hawthorns are often attractive, but short-lived, while the thorns can be a persistent hazard.

## What is a cultivar?

A cultivar is a named plant selection from which identical, or near-identical plants can be produced. An example is "Emerald Queen" Norway maple. Vegetative reproduction or "cloning" is the propagation method most often used. There are often many cultivars selected from a single species. Cultivars are often superior in quality and are readily available at nurseries and garden centers. There are too many to be listed individually in this guide, but information on cultivars can be obtained from the list of references.



## TABLE KEY

### Limitations:

- 1 - requires well-drained soil
- 2 - requires high soil moisture
- 3 - protection from afternoon sun recommended
- 4 - weak wood and branch structure
- 5 - dangerous thorns
- 6 - fruit or plant parts can be a nuisance
- 7 - prone to major disease or insect pests
- 8 - prone to minor disease or insect pests
- 9 - highly susceptible to ice storm damage
- 10 - sunscald on trunk bark is common
- 11 - excessive sucker growth can be a problem
- 12 - roots prone to invading sewer pipes

### Light Requirements:

- - all day sun    ● - all day shade  
boxes without either of the above symbols represent intermediate light requirements

### Easy to Transplant?:

- - yes  
■ - intermediate  
□ - no

### Tolerant to:

- - tolerant  
■ - intermediate or uncertain  
□ - intolerant

### Form:

- R - rounded  
B - broad  
O - oval  
P - pyramidal  
V - vase shaped  
L - layered (horizontally)  
W - weeping  
S - shrubby

- † - Difficult to obtain  
\* - Native to Illinois



CULTURAL CHARACTERISTICS								SPECIES CHARACTERISTICS												
Useful Range in Illinois	Easy to Transplant?	Tolerant To				Light Required	Limitations			Form	Mature Height	Growth Rate (first 10 yrs.)	Longevity	Features with Ornamental Interest					Cultivars Available	Spring Planting Best
		Drought	Poor Drainage	Alkaline Soils	Salt									Foliage	Bark	Flowers	Fruit	Fall Color		
all	■	□	■	■	□		2		Alder, European Black, <i>Alnus glutinosa</i>	O	■	■	■				✓		✓	
n	■	□	■	■	□		2		† * Alder, Speckled, <i>Alnus rugosa</i>	S	□	■	■		✓		✓			
all	■	□	■	■	□		2		Alder, White, <i>Alnus incana</i>	O	■	■	■		✓		✓			
all	■	■	□	■	■	○	1, 7		Apricot, Manchurian, <i>Prunus armeniaca</i> var. <i>mandshurica</i>	R	□	■	□			✓	✓	✓	✓	✓
all	■	■	■	■	■				† * Ash, Blue, <i>Fraxinus quadrangulata</i>	R	■	■	■							
all	■	■	■	■	■		8		Ash, European, <i>Fraxinus excelsior</i>	R	■	■	■						✓	
all	■	■	■	■	■		8		* Ash, Green, <i>Fraxinus pennsylvanica</i>	O	■	■	■						✓	
all	■	■	■	■	■				* Ash, White, <i>Fraxinus americana</i>	O	■	■	■					✓	✓	
all	■	□	■	■	■				* Baldcypress, <i>Taxodium distichum</i>	P	■	■	■		✓			✓		✓
all	□	□	□	□	□	●	1, 10		† * Beech, American, <i>Fagus grandifolia</i>	B	■	□	■	✓	✓			✓		✓
all	■	□	□	■	□	●	1, 10		Beech, European, <i>Fagus sylvatica</i>	B	■	□	■	✓	✓			✓	✓	✓
all	■	□	□	■	■		2, 3, 7, 9		Birch, European White, <i>Betula pendula</i>	P	■	■	□		✓				✓	✓
all	■	□	□	■	■		2, 3, 7		Birch, Gray, <i>Betula populifolia</i>	P	■	■	□		✓				✓	✓
all	■	□	□	■	■		1, 2, 3, 9		Birch, Japanese Whitespire, <i>Betula platyphylla</i> 'Whitespire'	P	■	■	■		✓				✓	✓
all	■	□	□	■	■		2, 3, 7, 9		* Birch, Paper, <i>Betula papyrifera</i>	P	■	■	□		✓				✓	✓
all	■	□	■	□	■		9		* Birch, River or Red, <i>Betula nigra</i>	O	■	■	■		✓				✓	
n	■	■	□	■	■		2, 3, 7		† * Birch, Yellow, <i>Betula alleghaniensis</i>	O	■	■	■		✓			✓		✓



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SPECIES INFORMATION

prepared by The Morton Arboretum



all	■	■	■	■	■	6	* Buckeye, Ohio or Fetid, <i>Aesculus glabra</i>	R	■	■	■			✓		✓		
all	■	■	■	■	■		* Buckeye, Red, <i>Aesculus pavia</i>	S	□	□	■			✓				
all	■	■	■	■	■	6	† Buckeye, Yellow, <i>Aesculus octandra</i>	O	■	■	■		✓	✓				
all	■	■	■	■	■	6	Buckthorn, Common, <i>Rhamnus cathartica</i>	R	□	■	■							
all	□	■	■	■	■	2, 7	† * Butternut, <i>Juglans cinerea</i>	R	■	■	■		✓					
all	■	■	■	■	■	6	Catalpa, Chinese, <i>Catalpa ovata</i>	R	■	■	■			✓	✓			
all	■	■	■	■	■	6, 8	* Catalpa, Northern or Western, <i>Catalpa speciosa</i>	O	■	■	■			✓	✓			
all	■	■	■	■	■	6, 8	* Catalpa, Southern, <i>Catalpa bignonioides</i>	R	■	■	■			✓	✓			
all	■	■	□	■	■	○ 1	† Cherry, Amur Chokecherry, <i>Prunus maackii</i>	O	■	■	■		✓	✓				✓
all	■	■	□	■	□	6, 8, 9	* Cherry, Black, <i>Prunus serotina</i>	O	■	■	■		✓	✓	✓			✓
all	■	■	□	■	■	○ 1, 6, 7	Cherry, European Bird, <i>Prunus padus</i>	R	■	■	■			✓				✓
c, s	■	■	□	■	■	○ 1, 8	Cherry, Weeping, <i>Prunus subhirtella</i> var. <i>pendula</i>	W	■	■	■		✓	✓			✓	✓
c, s	■	■	□	■	■	○ 1, 8	Cherry, Japanese Flowering, <i>Prunus serrulata</i>	V	■	■	■		✓	✓			✓	✓
all	■	■	□	■	■	○ 1, 6	Cherry, Pin, <i>Prunus pensylvanica</i>	O	□	■	□		✓			✓		✓
all	■	■	□	■	■	○ 1	† Cherry, Sargent, <i>Prunus sargentii</i>	V	■	■	■		✓	✓		✓	✓	✓
all	■	■	□	■	■	○ 1, 6, 8	* Cherry, Choke, <i>Prunus virginiana</i>	S	□	■	□	✓		✓			✓	✓
all	■	■	□	■	■	○ 1, 6, 8	Cherry, Sweet, <i>Prunus avium</i>	O	■	■	■		✓		✓		✓	✓
all	■	■	■	■	■	7	† * Chestnut, American, <i>Castanea dentata</i>	R	■	■	■			✓	✓			✓
all	■	■	■	■	■		Chestnut, Chinese, <i>Castanea mollissima</i>	R	■	■	■			✓	✓			✓
all	■	■	■	■	■	6	* Coffeetree, Kentucky, <i>Gymnocladus dioica</i>	R	■	■	■	✓	✓			✓		
all	■	■	■	■	■	2, 6	Corktree, Amur, <i>Phellodendron amurense</i>	R	■	■	■		✓		✓	✓	✓	✓
all	■	■	■	■	★	○ 6, 8, 11	* Crabapple, <i>Malus</i>	★	★	■	■			✓	✓		✓	
all	■	■	■	■	□		Dogwood, Corneliancherry, <i>Cornus mas</i>	R	□	□	■		✓	✓	✓		✓	✓
c, s	□	□	□	■	■	● 1, 3, 8	* Dogwood, Flowering, <i>Cornus florida</i>	L	□	□	■		✓	✓	✓	✓	✓	✓
all	■	□	□	■	■	1	† Dogwood, Japanese Cornel, <i>Cornus officinalis</i>	R	□	□	■		✓	✓	✓			✓
c, s	■	□	□	■	■	1, 3	† Dogwood, Kousa, <i>Cornus kousa</i>	L	□	□	■		✓	✓	✓	✓	✓	✓

† Difficult to obtain

\* Native to Illinois

Trees not recommended for planting

★ Varies widely with cultivar




















































































































































































































































CULTURAL CHARACTERISTICS								SPECIES CHARACTERISTICS									
Useful Range in Illinois	Easy to Transplant?	Tolerant To				Light Required	Limitations	Form	Mature Height	Growth Rate (first 10 yrs.)	Longevity	Features with Ornamental Interest				Cultivars Available	Spring Planting Best
		Drought	Poor Drainage	Alkaline Soils	Salt							Foliage	Bark	Flowers	Fruit		
all	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1, 3	Dogwood, Pagoda, <i>Cornus alternifolia</i>	H	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
all	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	7, 9, 12	* Elm, American, <i>Ulmus americana</i>	V	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>					<input checked="" type="checkbox"/>	
all	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8	Elm, English, <i>Ulmus carpinifolia</i>	P	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						
all	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	9	Elm, Chinese or Lacebark, <i>Ulmus parvifolia</i>	R	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				
all	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		Elm, Regal, <i>Ulmus</i> 'Regal'	P	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>	
all	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7	† * Elm, Rock, <i>Ulmus thomasii</i>	O	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>						
all	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	8, 9	Elm, Siberian, <i>Ulmus pumila</i>	R	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>						
all	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7	† * Elm, Slippery or Red, <i>Ulmus rubra</i>	O	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>						
all	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		Filbert, European, <i>Corylus avellana</i>	S	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						
all	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		† Filbert, Turkish, <i>Corylus colurna</i>	P	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
all	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	6	Ginkgo, <i>Ginkgo biloba</i>	O	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
c, s	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		Goldenraintree, <i>Koelreuteria paniculata</i>	O	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
all	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	9	* Hackberry, Common, <i>Celtis occidentalis</i>	V	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
c, s	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		* Hackberry, Sugar, <i>Celtis laevigata</i>	V	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
c, s	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		† Hardy Rubber Tree, <i>Eucommia ulmoides</i>	B	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>					
all	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	5, 6	* Hawthorn, Cockspur, <i>Crataegus crus-galli</i>	L	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
all	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5, 8	Hawthorn, English, <i>Crataegus laevigata</i>	O	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	



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all	     	5, 8	* Hawthorn, Dotted, <i>Crataegus punctata</i>	L	   			✓	✓		✓	
all	     	8	* Hawthorn, Downy, <i>Crataegus mollis</i>	L	   			✓	✓			
all	     		Hawthorn, Lavalley, <i>Crataegus X lavalleyi</i>	R	   			✓				
all	     	8	Hawthorn, Vaughn, <i>Crataegus</i> 'Vaughn'	L	   			✓	✓			
all	     	5, 9	Hawthorn, Washington, <i>Crataegus phaenopyrum</i>	V	   			✓	✓	✓		
all	     		* Hawthorn, Winter King, <i>Crataegus viridis</i> 'Winter King'	L	   		✓	✓	✓		✓	
all	    	6	† * Hickory, Bitternut, <i>Carya cordiformis</i>	O	   		✓					✓
all	    	6	† * Hickory, Shagbark, <i>Carya ovata</i>	O	   		✓					✓
all	    		Holly, American, <i>Ilex opaca</i>	P	   	✓			✓		✓	
all	    	9	* Honeylocust, Thornless, <i>Gleditsia triacanthos</i> var. <i>inermis</i>	R	   	✓				✓	✓	
all	     		* Hornbeam, American (Blue Beech), <i>Carpinus caroliniana</i>	O	   		✓		✓	✓		✓
all	    		Hornbeam, European, <i>Carpinus betulus</i>	O	   		✓		✓		✓	✓
all	    	6	* Horsechestnut, Common, <i>Aesculus hippocastanum</i>	R	   			✓			✓	
c, s	    		Horsechestnut, Red, <i>Aesculus X carnea</i>	R	   			✓			✓	
all	    		* Ironwood (Hophornbeam), <i>Ostrya virginiana</i>	P	   		✓		✓			✓
all	    	3	Katsuratree, <i>Cercidiphyllum japonicum</i>	O	   	✓				✓	✓	✓
c, s	    	2	* Larch, American (Tamarack), <i>Larix laricina</i>	P	   	✓			✓	✓		✓
all	    		Larch, European, <i>Larix decidua</i>	P	   	✓			✓	✓		✓
all	    		Larch, Japanese, <i>Larix kaempferi</i>	P	   	✓			✓	✓		✓
all	    		Lilac, Japanese Tree, <i>Syringa reticulata</i>	R	   		✓	✓	✓		✓	
all	    		† Lilac, Peking, <i>Syringa pekinensis</i>	O	   		✓	✓	✓			
all	    		* Linden, American (Basswood), <i>Tilia americana</i>	O	   			✓			✓	
all	    		Linden, Bigleaf, <i>Tilia platyphyllos</i>	O	   			✓				
all	    		Linden, Littleleaf, <i>Tilia cordata</i>	P	   			✓			✓	
all	    		† Linden, Silver, <i>Tilia tomentosa</i>	P	   	✓		✓			✓	
all	    	2	† * Linden, Beetree (White Basswood) <i>Tilia heterophylla</i>	O	   	✓		✓			✓	



## CULTURAL CHARACTERISTICS

Useful Range in Illinois	Easy to Transplant?	Tolerant To				Light Required	Limitations
		Drought	Poor Drainage	Alkaline Soils	Salt		
all	■	■	■	■	■		7, 11
all	□	□	□	■	■		
all	□	□	□	■	■		
all	□	□	□	■	■		
all	□	□	□	□	■		
s	□	■	■	■	■		
c, s	□	□	■	□	■		
all	■	■	■	■	■		
all	■	■	□	■	■		
all	■	■	■	■	■		4, 8
all	■	■	■	■	■		
all	■	■	■	■	■		
c, s	■	□	□	■	■		1, 3
all	■	■	■	■	■		
all	■	■	■	■	■		
all	□	□	■	■	■	●	1, 3
all	■	■	■	■	■		



# Selecting & Planting Trees

SPECIES INFORMATION  
prepared by The Morton Arboretum

## SPECIES CHARACTERISTICS


Form	Mature Height	Growth Rate (first 10 yrs.)	Longevity	Features with Ornamental Interest					Cultivars Available	Spring Planting Best
				Foliage	Bark	Flowers	Fruit	Fall Color		
O	■	■	□			✓			✓	
O	■	■	■			✓				✓
O	■	□	■		✓	✓				✓
O	■	□	■		✓	✓				✓
R	■	■	■		✓	✓			✓	✓
O	■	■	■	✓		✓	✓		✓	✓
S	■	■	■	✓		✓	✓			✓
R	□	■	■				✓	✓	✓	
O	■	■	■					✓		
R	■	■	■						✓	
O	■	■	■					✓	✓	
R	□	□	■	✓				✓	✓	
R	■	■	■			✓		✓	✓	
O	□	□	■		✓			✓		✓
R	■	□	■	✓				✓		



all	■	■	■	■	○	11	† * Poplar, Bigtooth Aspen, <i>Populus grandidentata</i>	O	■	■	■	✓			✓	✓	✓
all	■	■	■	■	○	6, 9, 12	* Poplar, Cottonwood, <i>Populus deltoides</i>	O	■	■	■				✓	✓	✓
all	■	■	■	■	○	12	Poplar, Hybrid, <i>Populus euroamericana</i>	O	■	■	■				✓	✓	✓
all	■	■	■	■	○	7	Poplar, Lombardy, <i>Populus nigra</i> 'Italica'	O	■	■	■				✓		✓
all	■	■	■	■	○	11	* Poplar, Quaking Aspen, <i>Populus tremuloides</i>	O	■	■	■	✓	✓		✓		✓
all	■	■	■	■	○	8, 11, 12	Poplar, White or Silver, <i>Populus alba</i>	R	■	■	■	✓	✓				✓
all	■	■	□	■	□	1, 8	* Redbud, <i>Cercis canadensis</i>	B	□	■	■	✓	✓				✓
all	■	■	□	□	□	1	† Redwood, Dawn, <i>Metasequoia glyptostroboides</i>	P	■	■	■	✓	✓		✓		
all	■	■	□	■	○	7	Russian-olive, <i>Elaeagnus angustifolia</i>	R	■	■	□	✓			✓		
all	□	■	□	□	■	1, 11	† * Sassafras, Common, <i>Sassafras albidum</i>	O	■	■	■	✓		✓		✓	✓
all	■	■	□	■	■		Serviceberry, Apple, <i>Amelanchier X grandiflora</i>	L	■	■	■		✓	✓	✓	✓	✓
all	■	■	□	■	■		* Serviceberry, Shadblow, <i>Amelanchier arborea</i>	O	■	■	■		✓	✓	✓	✓	
all	■	■	□	■	■		* Serviceberry, Allegheny, <i>Amelanchier laevis</i>	O	■	■	■		✓	✓	✓	✓	✓
s	■	■	□	■	○	6, 8	Silk-tree (Mimosa), <i>Albizia julibrissin</i>	B	■	■	■	✓		✓			✓
all	■	□	■	■	■	2, 3	† Silverbell, Carolina, <i>Halesia carolina</i>	B	■	■	■			✓	✓		✓
all	■	■	□	■	■	1, 8	Smoketree, Common, <i>Cotinus coggygia</i>	S	□	■	■	✓		✓		✓	✓
c, s	■	■	□	■	■	1, 8	† Smoketree, American, <i>Cotinus obovatus</i>	O	■	■	■		✓	✓		✓	
all	□	■	■	□	■		* Sourgum (Black Tupelo) <i>Nyssa sylvatica</i>	P	■	■	■	✓				✓	✓
c, s	■	■	□	□	■		† Sourwood, <i>Oxydendrum arboreum</i>	R	□	■	■			✓	✓	✓	✓
c, s	■	■	■	□	■	6	* Sweetgum, <i>Liquidambar styraciflua</i>	P	■	■	■	✓			✓	✓	✓
all	■	■	■	■	■	6, 9, 12	* Sycamore, <i>Platanus occidentalis</i>	O	■	■	■		✓		✓		
all	■	■	■	■	■	4, 6, 11	Tree of Heaven, <i>Ailanthus altissima</i>	V	■	■	■	✓					
all	■	■	■	□	□		* Tuliptree, <i>Liriodendron tulipifera</i>	O	■	■	■			✓	✓	✓	✓
all	■	■	■	■	■		* Viburnum, Blackhaw, <i>Viburnum prunifolium</i>	S	□	□	■			✓		✓	
all	■	■	■	■	■		† Viburnum, Siebold, <i>Viburnum sieboldii</i>	S	□	□	■	✓		✓	✓		
all	■	■	■	■	■	6	* Walnut, Black, <i>Juglans nigra</i>	O	■	■	■						✓

† Difficult to obtain   \* Native to Illinois   ■ Trees not recommended for planting



CULTURAL CHARACTERISTICS										SPECIES CHARACTERISTICS										
Useful Range in Illinois	Easy to Transplant?	Tolerant To				Light Required	Limitations		<h1>Selecting &amp; Planting Trees</h1> <p>SPECIES INFORMATION prepared by The Morton Arboretum</p>	Form	Mature Height	Growth Rate (first 10 yrs.)	Longevity	Features with Ornamental Interest					Cultivars Available	Spring Planting Best
		Drought	Poor Drainage	Alkaline Soils	Salt									Foliage	Bark	Flowers	Fruit	Fall Color		
all	■	□	■	■	■		2, 4, 9, 12	† * Willow, Black, <i>Salix nigra</i>	O	■	■	■								✓
all	■	□	■	■	■		2, 4, 9, 12	Willow, Corkscrew, <i>Salix matsudana</i> 'Tortuosa'	O	■	■	□								✓
all	■	□	■	■	■		2, 4, 6, 9, 12	Willow, Weeping, <i>Salix alba</i> 'Tristis'	W	■	■	■								✓
all	■	□	■	■	■		2, 8	Willow, French pussy, <i>Salix caprea</i>	S	□	■	□			✓					✓
all	■	■	■	■	■		8	* Yellowwood, <i>Cladrastis lutea</i>	R	■	■	■		✓	✓					✓
all	■	■	□	□	■		1, 8	Zelkova, Japanese, <i>Zelkova serrata</i>	V	■	■	■		✓			✓	✓		✓
<b>EVERGREENS</b>																				
all	■	■	■	■	■		9	Arborvitae, Oriental, <i>Thuja orientalis</i>	P	■	□	■				✓				
all	■	□	■	■	□		2, 9	* Arborvitae, White Cedar, <i>Thuja occidentalis</i>	P	■	■	■				✓		✓		
all	■	□	■	■	■		2	Douglasfir, <i>Pseudotsuga menziesii</i>	P	■	□	■				✓		✓		
all	■	■	□	■	■			Fir, Concolor or White, <i>Abies concolor</i>	P	■	□	■	✓						✓	
all	■	□	□	□	□		2, 3	Hemlock, Canadian, <i>Tsuga canadensis</i>	P	■	■	■	✓						✓	✓
all	■	■	□	■	■	○		Juniper, Chinese, <i>Juniperus chinensis</i>	P	■	■	■					✓		✓	
all	■	■	□	■	■	○	8	* Juniper, Eastern Redcedar, <i>Juniperus virginiana</i>	P	■	■	■					✓		✓	
all	■	■	□	■	■	○	8	Juniper, Rocky Mountain, <i>Juniperus scopulorum</i>	P	■	■	■					✓		✓	
all	■	■	□	■	■	○	8	Pine, Austrian or Black, <i>Pinus nigra</i>	P	■	■	■		✓					✓	



all	■	□	■	□	□			* Maple, Red or Swamp, <i>Acer rubrum</i>	O	■	■	■	■	✓	✓		✓	✓	
all	■	■	■	■	■		4, 9, 12	* Maple, Silver, <i>Acer saccharinum</i>	O	■	■	■	■	✓		✓		✓	
all	■	■	□	■	□			* Maple, Sugar or Rock, <i>Acer saccharum</i>	O	■	■	■	■		✓		✓	✓	
all	■	■	■	■	■			† Maple, Sycamore or Planetree, <i>Acer pseudoplatanus</i>	O	■	■	■	■	✓		✓		✓	
all	■	■	■	■	■			Maple, Tartarian, <i>Acer tataricum</i>	R	■	■	■	■				✓	✓	
all	■	□	■	■	■	●	3	† Maple, Three-flowered, <i>Acer triflorum</i>	O	□	□	■	■	✓			✓		
n, c	■	□	□	■	■		2, 3, 7	Mountainash, American, <i>Sorbus americana</i>	O	■	■	□	■	✓	✓	✓	✓		
n, c	■	□	□	■	■		2, 3, 7	Mountainash, European, <i>Sorbus aucuparia</i>	O	■	■	□	■	✓	✓	✓	✓	✓	
n, c	■	□	□	■	■		2, 3	† Mountainash, Korean, <i>Sorbus alnifolia</i>	O	■	■	■	■	✓	✓	✓	✓		
n, c	■	□	□	■	■		2, 3	Mountainash, Showy, <i>Sorbus decora</i>	O	■	■	□	■	✓	✓	✓	✓	✓	
all	■	■	■	■	■		6	† * Mulberry, Red, <i>Morus rubra</i>	R	■	■	■	■	✓					
all	■	■	■	■	■		6, 9, 12	Mulberry, White, <i>Morus alba</i>	R	■	■	■	■				✓		✓
all	□	■	□	□	■		1, 6	† * Oak, Black, <i>Quercus velutina</i>	O	■	■	■	■	✓					✓
c, s	□	■	□	□	■		6	† * Oak, Blackjack, <i>Quercus marilandica</i>	R	■	□	■	■	✓					✓
all	■	■	■	■	■		6	* Oak, Bur, <i>Quercus macrocarpa</i>	B	■	■	■	■	✓					✓
c, s	■	■	■	■	■		6	† * Oak, Cherrybark, <i>Quercus falcata</i> var. <i>pagodaefolia</i>	R	■	■	■	■	✓					✓
all	■	■	□	■	■		6	* Oak, Chestnut, <i>Quercus prinus</i>	O	■	■	■	■				✓		✓
all	■	■	■	■	■		6	† * Oak, Chinkapin, <i>Quercus muehlenbergii</i>	O	■	■	■	■	✓			✓		✓
all	■	■	■	■	■		1, 6	Oak, English, <i>Quercus robur</i>	R	■	■	■	■					✓	
all	■	■	■	■	■	○	6	† * Oak, Hill's or Northern Pin, <i>Quercus ellipsoidalis</i>	P	■	■	■	■				✓		✓
all	■	■	■	□	□		6, 9	* Oak, Pin or Swamp, <i>Quercus palustris</i>	P	■	■	■	■				✓	✓	
c, s	□	■	□	□	■		6	† * Oak, Post, <i>Quercus stellata</i>	R	■	□	■	■	✓					✓
all	□	■	□	□	■		6	* Oak, Red, <i>Quercus rubra</i>	R	■	■	■	■	✓					✓
all	■	■	■	□	■		6	Oak, Sawtooth, <i>Quercus acutissima</i>	P	■	■	■	■	✓					✓
all	□	□	□	□	■		6	* Oak, Scarlet, <i>Quercus coccinea</i>	R	■	■	■	■				✓		✓
all	■	■	■	■	■		6	† * Oak, Schumard, <i>Quercus shumardii</i>	R	■	■	■	■	✓			✓		✓

† Difficult to obtain

\* Native to Illinois

■ Trees not recommended for planting



CULTURAL CHARACTERISTICS							SPECIES CHARACTERISTICS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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		Drought	Poor Drainage	Alkaline Soils	Salt			Form	Mature Height	Growth Rate (first 10 yrs.)	Longevity	Features with Ornamental Interest				Cultivars Available	Spring Planting Best																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											





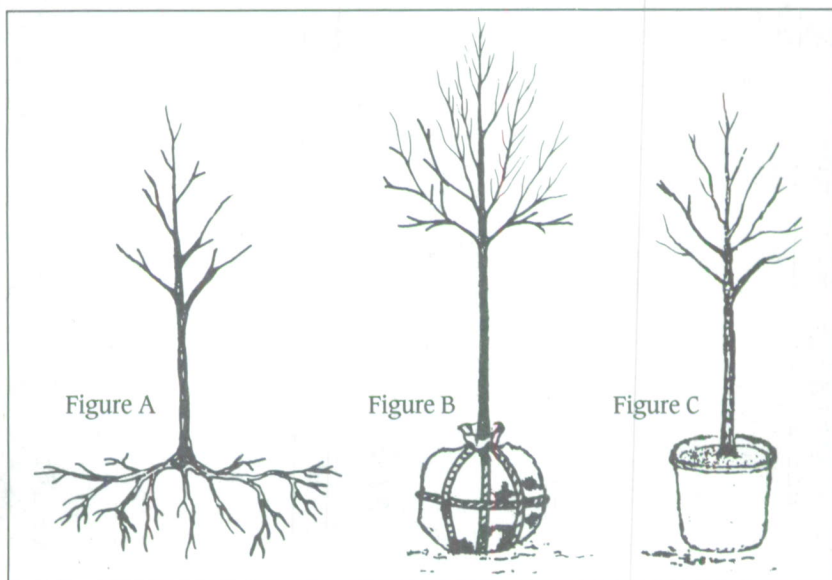
## OBTAINING TREES

Trees can be obtained from the nursery or garden center in several different forms. Each has advantages, and no single type is appropriate for all situations.

**Bare root** — No soil is moved with bare-root plants, and so roots must be kept moist at all times. Many of the large roots are undamaged, but most of the fine roots are lost. Bare-root trees are usually less than 2-inch caliper and should be planted when dormant.

**Root ball stock** — A ball of soil, containing the roots, is wrapped in burlap and moved with the tree. This is the most common method of transplanting field-grown trees. Sometimes nylon twine, treated burlap, and wire baskets are used. These materials have potential for causing damage, and upper portions should be removed after placement in the planting hole. Tree spades are machines used by landscape contractors to dig the root ball, and then transport and replant the tree into similar holes previously dug by the machine. Care must be taken to close air gaps around the root ball. Better yet, cultivating a doughnut-like circle of soil 8-12 inches deep and 2-3 feet wide around the root ball will provide loose soil for new root growth.

**Container plants** — Sometimes trees are grown above-ground in specially designed plastic pots. Because no digging is involved, container plants do not suffer root loss during transplanting. Round containers may cause circling roots which should be straightened or cut back at the time of planting. Container soils are very light and well drained, and require frequent irrigation in the landscape to avoid drought stress.



*Trees can be obtained from nurseries and garden centers as bare root stock (Figure A), root ball stock (Figure B), or container plants (Figure C).*



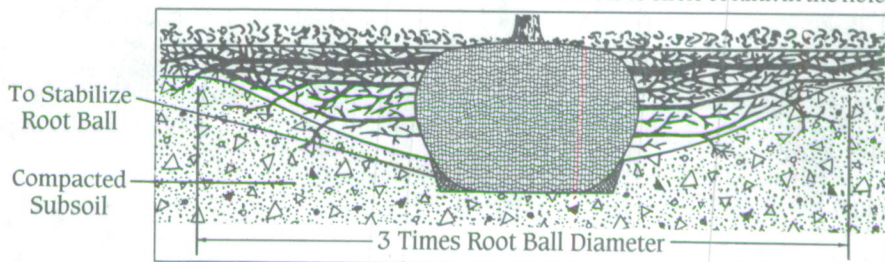
all	■	■	□	■	■	○		Pine, Balkan (Macedonian), <i>Pinus peuce</i>	P	■	□	■							
all	■	■	□	■	□		9	* Pine, Eastern White, <i>Pinus strobus</i>	P	■	■	■						✓	
all	■	■	□	■	■		9	† Pine, Himalayan, <i>Pinus wallichiana</i>	P	■	■	■							
all	□	■	□	■	■	○	8	* Pine, Jack, <i>Pinus banksiana</i>	P	■	□	■							
all	■	■	□	■	■	○		Pine, Lacebark, <i>Pinus bungeana</i>	O	■	□	■		✓					
all	■	■	□	■	■	○	8	Pine, Limber, <i>Pinus flexilis</i>	P	■	□	■						✓	
all	■	■	□	■	■	○	8	† Pine, Ponderosa, <i>Pinus ponderosa</i>	P	■	■	■							
all	□	■	□	■	□	○	1, 8	* Pine, Red, <i>Pinus resinosa</i>	P	■	■	■							
all	■	■	□	■	□	○	1, 7, 8	Pine, Scotch, <i>Pinus sylvestris</i>	P	■	■	■		✓				✓	
s	■	■	□	■	■	○		* Pine, Shortleaf, <i>Pinus echinata</i>	P	■	■	■							
all	■	■	□	■	■	○		Pine, Southwestern White, <i>Pinus strobiformis</i>	P	■	■	■							
all	■	■	□	■	■	○	8	† Pine, Swiss Stone, <i>Pinus cembra</i>	O	■	□	■							
c, s	■	■	□	■	■	○		Pine, Virginia, <i>Pinus virginiana</i>	P	■	■	■							
all	■	■	□	■	■	○	8	Spruce, Colorado, <i>Picea pungens</i>	P	■	■	■							
all	■	■	□	■	■	○	8	Spruce, Blue Colorado, <i>Picea pungens</i> var. <i>glauca</i>	P	■	■	■	✓					✓	
all	■	■	■	■	□	○		Spruce, Norway, <i>Picea abies</i>	P	■	■	■						✓	
all	■	■	□	■	■	○		Spruce, Serbian, <i>Picea omorika</i>	P	■	□	■	✓						
all	■	■	□	■	■	○		Spruce, White, <i>Picea glauca</i>	P	■	□	■						✓	
all	■	□	□	■	■		1, 8	Yew, Japanese, <i>Taxus cuspidata</i>	P	□	■	■	✓	✓		✓		✓	





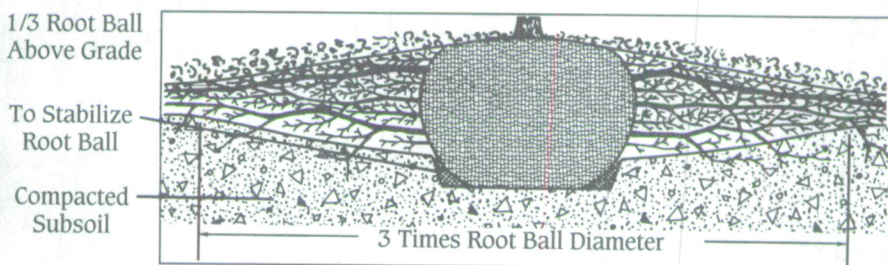
## PLANTING TREES

**Digging the hole** — The planting hole should always be considerably wider than the roots or root ball; three times wider is best. The sides should slope gradually, making the hole saucer-shaped or bowl-shaped. Do not dig any deeper than necessary to cover the roots, because the tree needs firm support below to stabilize it (and it also saves work). Planting a tree too deep can kill it. Roots of bare-root plants should be spread out in the wide shallow hole. Never allow the roots to circle or kink in the hole.

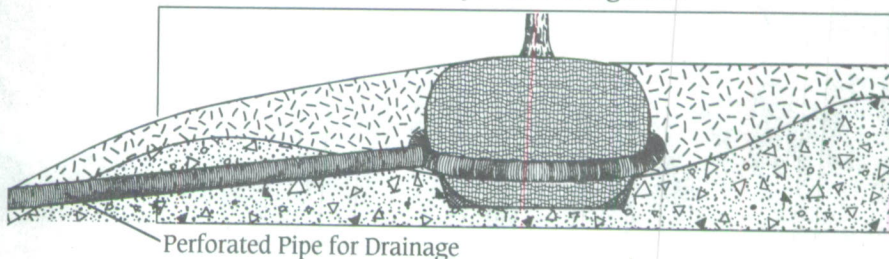


*The planting hole should be shallow and wide to allow for rapid root growth after planting. Planting trees too deeply is a common problem.*

**Drainage** — In poorly drained, compacted soils, drainage must be provided. More urban trees die from root drowning than from drying out. Before planting the tree, test the drainage of the planting hole by pouring a few gallons of water in the bottom. If the water hasn't soaked in after an hour, there probably is a drainage problem. Near a slope, small drains may be able to run water to some lower point. On level ground, planting the tree on a slight mound may be necessary to get the root system out of the saturated soil.



*Where adequate drainage is a problem, either elevate part of the root ball above grade and gradually slope the soil around it (as in Figure A), or provide a drain to a lower point, as in Figure B.*





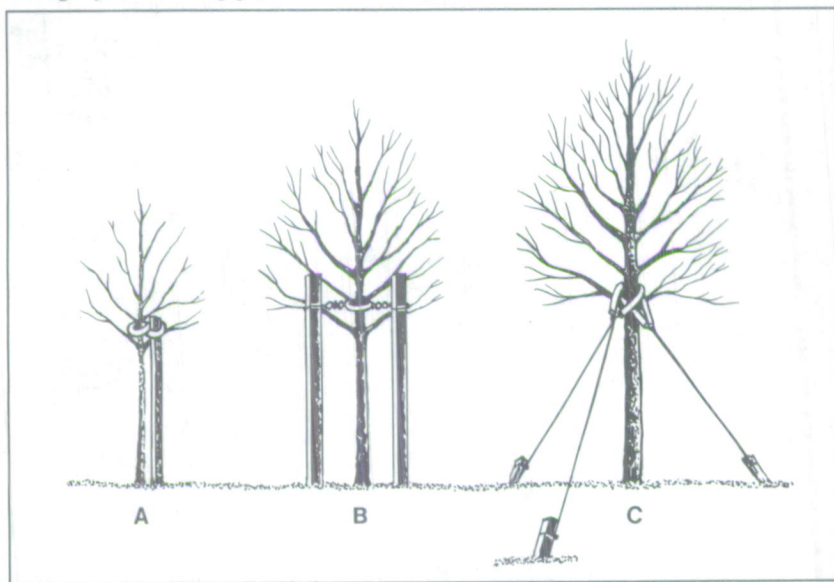
**Amending the soil** — If the soil has a high clay content and is not friable, it should be amended with up to 25 percent organic matter (leaf, garden and mushroom compost, etc.) before the hole is backfilled. New roots will grow more rapidly in this lighter, better-drained soil mixture.

**Fertilization** — Fertilization at the time of planting is generally not recommended. Research has shown that fertilization is ineffective until the tree has partially re-established its root system.

**Season to Plant** — The most favorable times of year to plant are spring and fall, because temperatures are moderate, and rainfall is usually plentiful. Summer planting is also possible if a judicious watering program is followed, particularly if the plants were dug from the nursery in spring, or grown in containers. Some species do not transplant well in the fall; these are indicated in the accompanying table.

**Mulching** — Studies have shown that wood-chip mulch can nearly double tree growth in the first few years after planting. A circle of mulch should be placed around every newly planted tree to conserve soil moisture and moderate soil temperatures. The mulch should cover an area at least four times the diameter of the root ball or root spread at the time of transplanting, and should be 3-4 inches deep.

**Staking** — When stability is a problem, trees should be staked for 1-3 years until growth of new roots has stabilized the tree. Care should be taken to avoid staking it too rigidly or allowing guy wires to damage the bark.

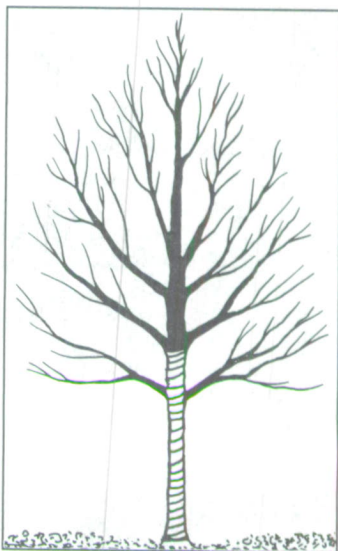


*Staking method varies with tree size. In Figure A., one stake is used for trees up to 2 inches diameter. The tree is attached to the stake by means of a wire through a piece of hose. In Figure B., trees 2-4 inches in diameter are supported by two stakes and attached as in A. As in Figure C., trees over 4 inches in diameter should be guyed with at least three guys.*

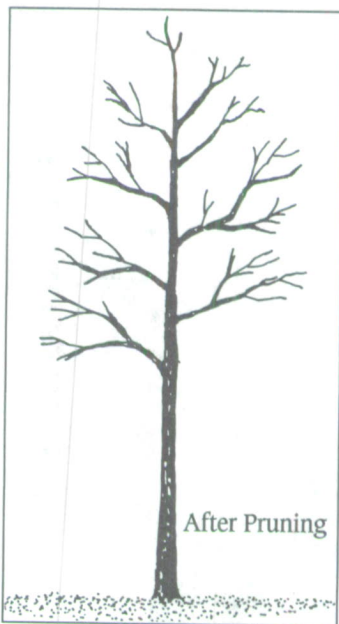
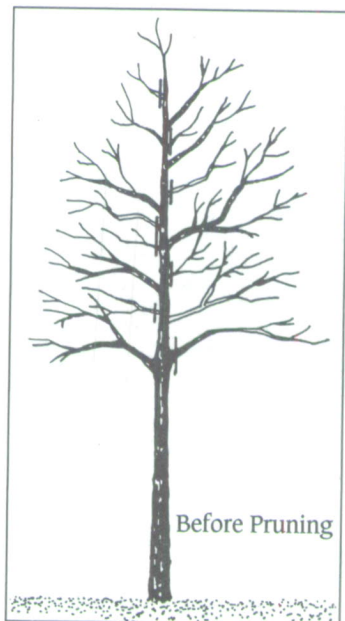


**Trunk Protection** — Trees with thin bark can be damaged by the warm winter sun (sunscauld) and should be protected. Standard paper tree wrap should be applied from the bottom up so that it overlaps like shingles. Wrap the trunk in the late fall, and remove the wrap each spring. Rabbits and mice can damage the trunks of small trees during the winter. Protect trunks with wire mesh or other products specifically designed for this purpose.

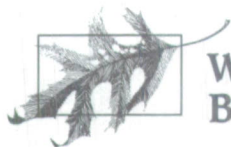
*Trunks of newly planted trees should be protected with special tree-wrapping paper. The wrapping is applied by starting just below the soil level and working up. It should be tight enough to prohibit entry of bark borers.*



**Pruning** — It is very important to insure the best possible branch structure while trees are young. At time of planting, be sure to remove all crossing branches. Side branches of trees with a central leader should be evenly spaced up and down the trunk. If possible, do not allow more than one branch to originate at the same location.





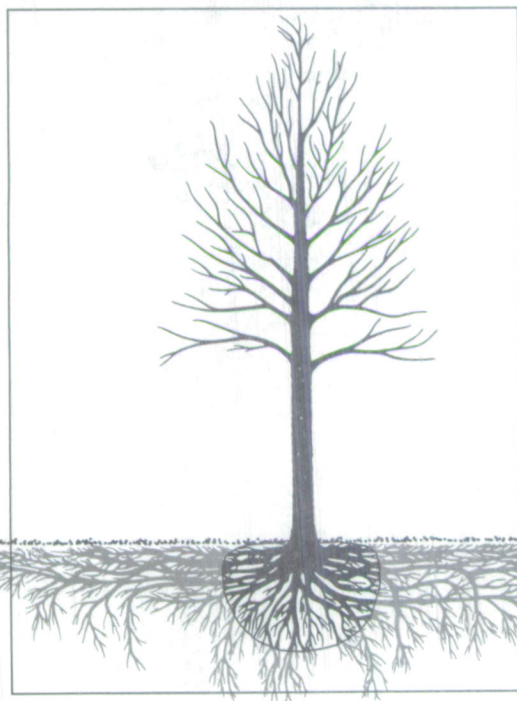


## WHY TREES ARE STRESSED BY TRANSPLANTING

To understand how a tree is stressed by transplanting, an understanding of a tree's root system is important. Many misconceptions exist about where tree roots grow. Roots do not grow as deep in the soil as many believe. Tree roots are located very near the surface and most are concentrated within the top foot of soil. Deeper soils are often dense and poorly aerated, and roots cannot grow in them. Tree roots spread much farther than the crown if space is available.

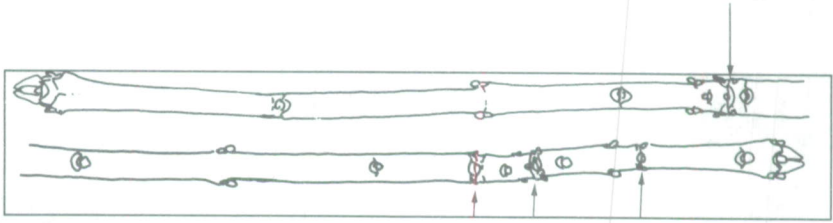
When a tree is dug out of the nursery, about 95 percent of the root system is left behind. The reduced root system causes stress and reduced growth in recently transplanted trees. The annual twig growth (delineated by bud scale scars) can be reduced substantially the first year or two after transplanting. The tree is not truly established until vigorous twig growth returns and this may take about one year for every inch in trunk diameter.

Stressed trees are susceptible to some serious disease and insect problems such as borers and canker diseases. Vigorous trees are usually not affected. Proper maintenance helps alleviate stress and increase natural resistance, but chemical methods may be necessary at times. When attempting to manage pests, it is important to distinguish serious problems that justify chemical treatment from cosmetic ones for which chemical applications are unnecessary or even harmful. Wood borers would be considered a serious problem, whereas most late-season leaf diseases would not.



*Roots of trees are quite shallow and spread much wider than the branches if the space is available. Only a small fraction of the roots are dug with the root ball.*





*Bud scale scars (arrows) show where twig growth stops each year. Growth of the bottom twig was slowed by transplanting stress.*



## MAINTAINING NEW TREES

Trees need maintenance throughout their lives, but it is particularly important during the period of establishment after transplanting. Since there is only about five percent of the tree's root system to absorb water, extra care must be given until new roots are regenerated.

**Watering** — Proper watering is the single most important aspect of maintenance of transplanted trees. The reduced root system of the newly transplanted tree is concentrated in a small soil volume with very little water available to it. Regular watering will be necessary. It is also easy to overwater, especially if the planting site is poorly drained. In the first few months after a tree is planted, a tree draws most of its moisture from roots within the root ball. The root ball can dry out in a few days, though surrounding soils remain moist. The only way to know is to probe the soil in the root ball frequently to check its moisture. The soil one to two inches under the surface should form a ball when squeezed. If it crumbles, it is too dry. A soil probe is ideal for this. Dryness can be accurately estimated with some practice by inserting a metal rod into the soil. The drier the soil the more resistance to penetration. Digging with a small shovel also works, but can result in considerable root damage if done too often. Even after trees are well established, they should be watered generously during periods of drought.

**Fertilization** — It is unlikely that any nutrient is limiting the growth of the tree immediately after transplanting. Drought stress is probably the most limiting factor at that time. Fertilization should be delayed until a season or two after the tree is planted (longer for large trees). Once vigor is regained, fertilize trees with a nitrogen fertilizer at a rate of up to six pounds of actual nitrogen per 1,000 square feet per year [approximately a 2-pound coffee can of ammonium sulfate spread over a 10-foot diameter circle]. This is a large amount of fertilizer and will have to be either watered in well or split into more than one application. The amounts of potassium, phosphorus, and other nutrients in soils vary and these nutrients may not need to be added. Proper soil testing will determine what other elements are required. Always apply fertilizers evenly over the entire root zone, and remember that the roots can grow well beyond the side branches in only a few years.

**Pruning** — Proper tree selection will eliminate the need for major pruning to control size in the future. Planting in the proper location will minimize the need for pruning to clear buildings and walkways as the tree grows. Once a good branch structure has been achieved, periodic removal of deadwood will be the only pruning requirement if a tree is well matched to its site.





## SUGGESTED SPECIES FOR SPECIAL SITUATIONS

### Trees that should be planted more often

Ash, Blue	Oak, Bur
Beech, European	Oak, Chestnut
Buckeye, Yellow	Oak, Chinkapin
Coffeetree, Kentucky	Oak, Shingle
Elm, Chinese (Lacebark)	Oak, Swamp White
Elm, Hybrid	Oak, White
Hazelnut, Turkish	Pagodatree, Japanese
Lilac, Japanese Tree	Pecan
Magnolia, Cucumber	Sourgum
Maple, Black	Sweetgum
Maple, Miyabe	Tuliptree
Maple, Shantung	Yellow-wood

### Trees with showy flower display

Apricot, Manchurian	Lilac, Japanese Tree
Buckeye, Red	Lilac, Peking
Cherry, Sargent	Magnolia, Kobus
Crabapple (cultivars)	Magnolia, Merrill
Adams	Magnolia, Saucer
Bob White	Magnolia, Southern
Donald Wyman	Mountainash, Korean
Floribunda	Mountainash, Showy
Indian Magic	Pagodatree, Japanese
Mary Potter	Pear, Callery (cultivars)
Ormiston Roy	Aristocrat
Prairifire	Autumn Blaze
Professor Sprenger	Chanticleer
Profusion	Rancho
Red Jewel	Plum, Purple-leaf
Red Splendor	Plum, Purple Sand Cherry
Sargentii	Plum, Wild
Snowdrift	Redbud
Sugar Tyme	Serviceberry, Apple
White Cascade	Serviceberry, Shadblow
Zumi Calocarpa	Serviceberry, Allegheny
Dogwood, Corneliancherry	Silk-tree (Mimosa)
Dogwood, Flowering	Silverbell, Carolina
Dogwood, Kousa	Viburnum, Blackhaw
Goldenraintree	Viburnum, Siebold
Hawthorns (thornless)	Willow, Pussy
Horsechestnut, Red	



**Trees for confined root spaces**

Ash, Green  
Crabapple  
Elm, Regal  
Elm, Chinese (Lacebark)  
Ginkgo (male)  
Hackberries  
Hawthorns (thornless)  
Honeylocust  
Linden, Little-leaf  
Maple, Amur  
Maple, Hedge  
Maple, Norway  
Maple, Tartarian  
Pear, Callery  
Planetree, London  
Poplar, "Tower"

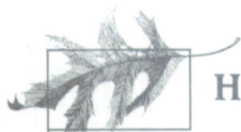
**Trees for lake or stream edges**

Alders  
Arbovitae (White Cedar)  
Ash, Green  
Baldcypress  
Birch, River  
Hackberries  
Honeylocust  
Larch, American  
Maple, Freeman., Red or Silver  
Oak, Pin, Swamp White or Willow  
Planetree, London  
Sourgum  
Sweetgum  
Sycamore  
Willows

**Trees not recommended for planting (Problems)**

Birch, European White (borers)  
Birch, Grey (borers)  
Birch, Paper (borers)  
Buckthorn (extremely aggressive)  
Butternut (canker disease)  
Cherry, Black (borers, black knot disease)  
Cherry, Choke (black knot disease)  
Cherry, European Bird (borers, black knot disease)  
Cherry, Pin (borers)  
Cherry, Sweet (borers)  
Chestnut, American (chestnut blight disease)  
Elm, American (Dutch elm disease)  
Elm, Red (Dutch elm disease)  
Elm, Rock (Dutch elm disease)  
Elm, Siberian (brittle wood, elm leaf beetle)  
Locust, Black (borers)  
Maple, Boxelder (brittle wood, boxelder bugs)  
Mountainash, American (borers, fire blight disease)  
Mountainash, European (borers, fire blight disease)  
Mulberry, White (fruit)  
Paulownia, Royal (extremely aggressive)  
Pine, Scotch (pine wilt disease)  
Poplar, Cottonwood (brittle wood, cottony seed)  
Poplar, Lombardy (canker disease)  
Poplar, White (suckers)  
Russian-olive (canker disease)  
Tree of Heaven (brittle wood)  
Walnut, Black (fruit, allelopathy)





## HELPFUL READING

Handbook of Landscape Tree Cultivars - Willett Wandell  
*East Prairie Publishing Co., Box 174, Gladstone, IL 61437*

Morton Arboretum Plant Information Bulletin Series  
*The Morton Arboretum, Lisle, IL 60532*

Illinois Trees: Selection, Planting, and Care - J. Cedric Carter  
*Illinois Natural History Survey, 607 E. Peabody, Champaign, IL 61820*

Fertilizing and Watering Trees - Dan Neely and E.B. Himelick  
*Illinois Natural History Survey, 607 E. Peabody, Champaign, IL 61820*

Tree and Shrub Transplanting Manual - E.B. Himelick  
*International Society of Arboriculture, P.O. Box 908, Urbana, IL 61801*

Trees for Urban Missouri - James P. Rocca, Dale Starkey and Eldon Heflin  
*Missouri Department of Conservation, Jefferson City, MO*

Recommended Urban Trees  
*Urban Horticulture Institute, Cornell University, Ithaca, NY*

Street Tree Factsheets-H.D. Gerhold, W.N. Wandell N.L. Lacasse & R.D. Schein  
*Penn State University College of Agriculture, University Park, PA.*

Forest Trees of Illinois - Robert H Mohlenbrock  
*Illinois Department of Conservation, Springfield, IL*

Street Trees for Metropolitan New York - P. Berrang and D.F. Karnosky  
*NY Botanic Garden Institute of Urban Horticulture Publication No. 1*

Manual of Woody Landscape Plants - M. Dirr  
*Stipes Publishing Co., Champaign, IL 61820*

The Complete Trees of North America - T.S. Elias  
*Van Nostrand Reinhold Co., NY*

Wyman's Gardening Encyclopedia - D. Wyman  
*MacMillan Publishing Co., NY*

Plants That Merit Attention: Volume I-Trees - Janet M. Poor  
*Timber Press, Portland, OR*

Pruning Evergreens & Deciduous Trees & Shrubs - F.A. Giles and W.B. Siefert  
*University of Illinois Cooperative Extension Service, Urbana, IL 61801*

All About Trees - Ortho Books  
*Chevron Chemical Company, Box 5047, San Ramon, CA 94583*

All About Pruning - Ortho Books  
*Chevron Chemical Company, Box 5047, San Ramon, CA 94583*

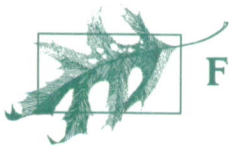
Arboriculture: Care of Trees, Shrubs and Vines in the Landscape - R.W. Harris  
*Prentice-Hall, Inc. Englewood Cliffs, NJ 07632*

Anderson Horticultural Library's Source List of Plants and Seeds-R.T. Isaacson  
*Anderson Horticultural Library, University of Minnesota*

Tree Maintenance - P.P. Pirone  
*Oxford University Press, New York, NY.*

Pruning: How to Guide for Gardeners - M. MacCaskey and R.L. Stebbins  
*Price Stern Sloan Inc., Los Angeles, CA 90021*





## FOR FURTHER INFORMATION

*Where to get advice on tree planting and maintenance:*

**The Morton Arboretum**  
4100 Illinois Route 53  
Lisle, IL 60532-1293  
PH.(630) 968-0074  
[www.mortonarb.org](http://www.mortonarb.org)

**The Chicago Botanic Garden**  
P.O. Box 400  
Glencoe, IL 60022-0400  
PH.(847) 835-5440  
[www.chicago.botanic.org](http://www.chicago.botanic.org)

**Illinois Department of Natural Resources**  
**Division of Forest Resources**  
524 South Second St.  
Springfield, IL 62701-1787  
PH.(217) 782-2361  
[www.dnr.state.il.us/](http://www.dnr.state.il.us/)

**Illinois Arborist Association**  
4824 Seeley Ave.  
Downers Grove, IL 60515-3410  
PH.(630) 960-5922

**International Society of Arboriculture**  
1400 W. Anthony  
P.O. Box 3129  
Champaign, IL 61826-3129  
PH.(217) 355-9411  
[www.ag.uiuc.edu/~isa](http://www.ag.uiuc.edu/~isa)

**DuPage Environmental Awareness Center**  
703 Warrenville Rd.  
Wheaton, IL 60187  
PH.(630) 681-8979  
[www.terasys.com/deac/](http://www.terasys.com/deac/)

**Illinois Landscape Contractors Association**  
2200 S. Main St., #304  
Lombard, IL 60148  
PH.(630) 932-8443

**Illinois Nurserymen's Association**  
**1717 South Fifth Street**  
Springfield, IL 62703  
PH.(217) 525-6222  
[www.ina-online.org](http://www.ina-online.org)

**University of Illinois Cooperative Extension Service County Offices**  
[www.ag.uiuc.edu](http://www.ag.uiuc.edu)

**Local tree care firms and consulting arborists**

**Local municipal arborists or foresters**

*For information on community tree programs:*

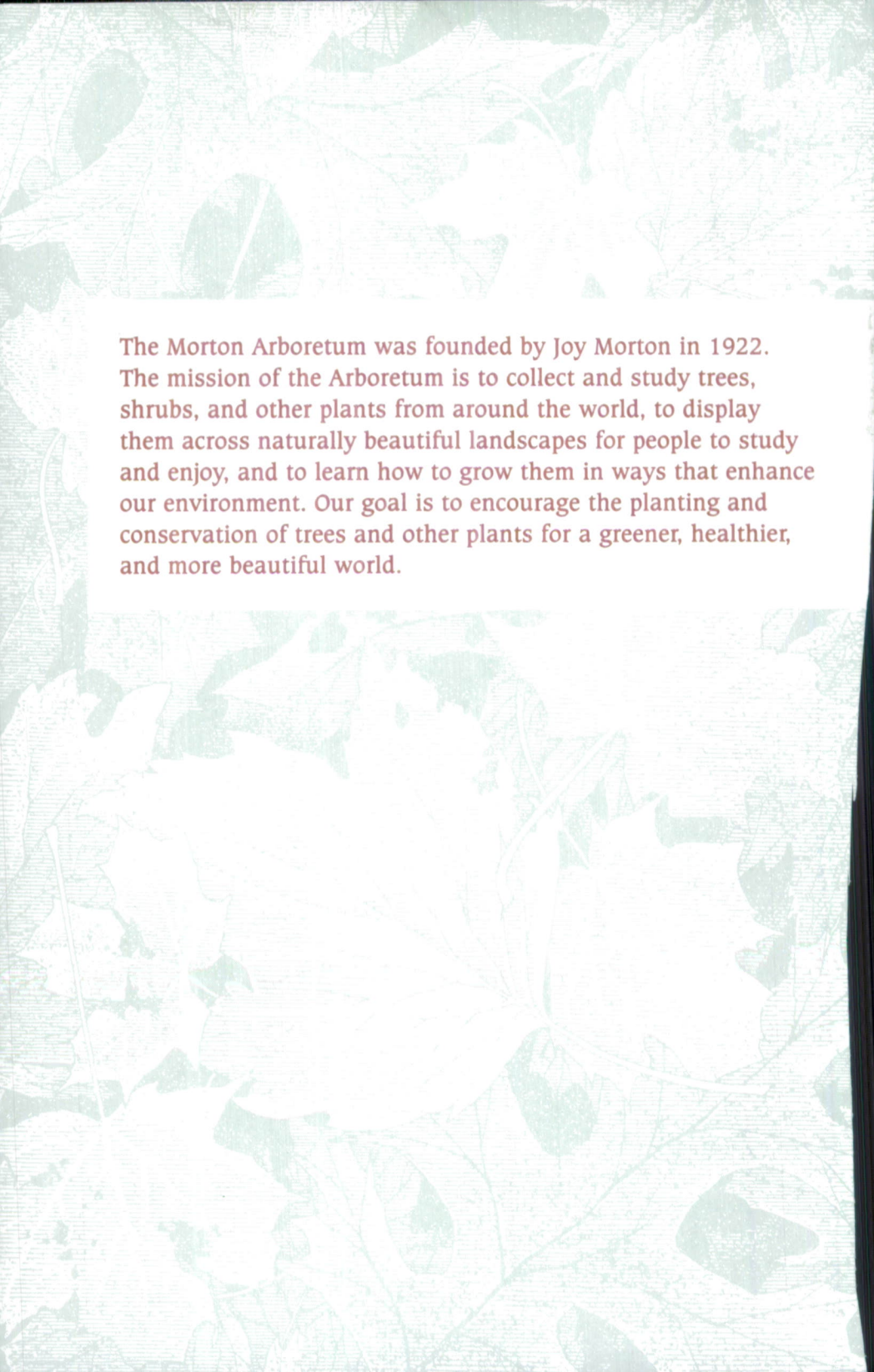
**PLANT ILLINOIS-a growing concern**  
**Illinois Department of Natural Resources**  
524 South Second Street  
Springfield, IL 62701  
PH.(217) 782-2361  
PH.(312) 814-2071

**Global ReLeaf**  
**American Forestry Association**  
P.O. Box 2000  
Washington, DC 20013  
PH.(202) 955-4500  
[www.amfor.org](http://www.amfor.org)

**Openlands Project**  
220 S. State Street  
Suite 1880  
Chicago, IL 60604  
PH.(312) 427-4256

**The National Arbor Day Foundation**  
**Tree City USA**  
100 Arbor Avenue  
Nebraska City, NE 68410  
PH.(402) 474-5655  
[www.arborday.org](http://www.arborday.org)



The background of the entire page is a dense, textured pattern of green leaves and branches, rendered in a light, almost ethereal style. The leaves vary in shape, with some showing prominent veins. The overall tone is a soft, muted green, creating a natural and serene atmosphere.

The Morton Arboretum was founded by Joy Morton in 1922. The mission of the Arboretum is to collect and study trees, shrubs, and other plants from around the world, to display them across naturally beautiful landscapes for people to study and enjoy, and to learn how to grow them in ways that enhance our environment. Our goal is to encourage the planting and conservation of trees and other plants for a greener, healthier, and more beautiful world.